I. AMENDMENT

In the Claims:

Please amend the claims as follows:

1. (previously presented) A servo circuit, comprising:
a synchronous partial-response-maximum-likelihood servo channel operable to recover servo data from servo wedges that identify respective data sectors on a data-storage disk, the servo channel inoperable to recover data from the data sectors; and
a processor coupled to and operable to control the servo channel.

2. (original) The servo circuit of claim 1 wherein:
the servo channel is operable to receive a servo-data sample clock; and
the servo channel comprises a digital timing-recovery loop operable to synchronize the sample clock to the servo data.

3. (original) The servo circuit of claim 1 wherein:
the servo channel is operable to receive a servo signal that represents the servo data, the servo signal having an amplitude; and
the servo channel comprises a digital gain-recovery loop operable to adjust the gain of the servo signal to a target.

4. (previously presented) The servo circuit of claim 1 wherein:
the servo channel is operable to receive a servo-data sample clock; and
the servo channel comprises a circuit operable to calculate an initial phase difference between the sample clock and the servo data.

5. (original) The servo circuit of claim 1 wherein:
the servo channel is operable to receive a servo signal that represents the servo data, the servo signal having an amplitude; and

the servo channel comprises a circuit operable to digitally calculate an initial gain of the servo signal.

6. (original) The servo circuit of claim 1 wherein the servo channel includes a Viterbi detector operable to recover the servo data from the servo wedges.

7. (original) The servo circuit of claim 1 wherein the servo channel includes a decoder operable to decode the recovered servo data.

8. (original) The servo circuit of claim 1, further comprising a demodulator for asynchronously recovering a characteristic of a position burst from the servo data.

9. (Currently amended) A servo circuit, comprising:

a synchronous partial response maximum likelihood servo channel operable to recover servo data from servo wedges that identify respective data sectors on a data-storage disk; and

a processor coupled to and operable to control the servo channel, and operable to detect one of the servo wedges during or after a disk spin-up search operation without first detecting a spin-up wedge, the detected servo wedge being the first servo wedge detected after initiation of the disk spin-up search operation.

10. (original) The servo circuit of claim 1, further comprising an interface circuit operable to couple the recovered servo data to and receive data from a circuit external to the servo circuit.

11. (original) The servo circuit of claim 1 wherein the synchronous servo channel is operable to detect spin-up wedges on the data-storage disk during a spin-up search operation.

12. (original) The servo circuit of claim 1 wherein the servo channel includes an analog-to-digital converter operable to convert an analog PR4-equalized servo signal into the digital domain.

13. (previously presented) A disk-drive system, comprising:

a data-storage disk having a surface, data sectors at respective locations of the surface and operable to store application data, and servo wedges that each include respective servo data that identifies the location of a respective data sector;

a motor coupled to and operable to rotate the disk;

a read head operable to generate a first read signal that represents the application data and a second read signal that represents the servo data, the read head having a position with respect to the surface of the data-storage disk;

a read-head positioning circuit operable to move the read head over the surface of the disk; and

a read channel coupled to the read head and including a first Viterbi detector operable to recover the application data from the data sectors, the read channel further including a servo circuit coupled to the read-head positioning system, the servo circuit including,

a synchronous servo channel having a second Viterbi detector operable to recover the servo data from the servo wedges, the second Viterbi detector different than the first Viterbi detector; and

a processor coupled to and operable to control the servo channel.

14. (previously presented) A method, comprising:

reading a data-storage disk having a surface and having servo sectors and data sectors disposed on the surface, the servo sectors including servo data and the data sectors including application data;

synchronously recovering the servo data from the servo sectors with a first partial-response-maximum-likelihood-detection algorithm; and

synchronously recovering the application data from the data sectors with a second partial-response-maximum-likelihood-detection algorithm that is different than the first algorithm.

15. (previously presented) The method of claim 14, further comprising:
generating a servo signal that represents the servo data;
sampling the servo signal; and
synchronizing a sample clock to the servo data by interpolating the values of the samples.

16. (original) The method of claim 14, further comprising:
generating a servo signal that represents the servo data;
sampling the servo signal; and
digitally adjusting the amplitude of the servo signal to a target level.

17. (original) The method of claim 14, further comprising:
sampling the servo data with a sample clock;
calculating an initial phase difference between the sample clock and the servo data; and
using the initial phase difference to facilitate synchronizing the sample clock to the servo data.

18. (original) The method of claim 14, further comprising:
generating a servo signal that represents the servo data;
calculating an initial difference between the amplitude of the servo signal and a predetermined amplitude; and
using the initial difference to facilitate adjusting the amplitude of the servo signal toward the predetermined amplitude.

19. (original) The method of claim 14, further comprising decoding the recovered servo data.

20. (previously presented) The method of claim 14, further comprising asynchronously demodulating a servo-position burst from the servo data.

21. (previously presented) The method of claim 14, further comprising:

asynchronously detecting a servo sector while or after the disk rotates from a first to a steady-state speed; and

reading the servo data from the detected servo sector to determine an initial position of a read head with respect to the surface of the disk.

22. (previously presented) A method, comprising:

asynchronously detecting a servo sector disposed on a surface of a data-storage disk while or after the disk rotates from a first to a steady-state speed without first detecting a spin-up wedge; and

synchronously recovering servo data from the detected servo sector with a partial-response-maximum-likelihood-detection algorithm to determine an initial position of a read head with respect to the surface of the disk.

23. (previously presented) The method of claim 14, further comprising asynchronously recovering spin-up data from a spin-up wedge that is disposed on the surface of the data-storage disk.